THE MATH TRANSLATOR

Prealgebra
Detailed Topics List with Suggested Homework and Assessments

CHAPTER 1 – WHOLE NUMBERS

Section 1.1 – Introduction to Whole Numbers

Topics:
A. Identify counting numbers and whole numbers
B. Identify the place value of a digit
C. Use place value to name whole numbers
D. Use place value to write whole numbers
E. Round whole numbers
Suggested Homework Exercises: 1 – 49 odd

Section 1.2 – Add Whole Numbers

Topics:
A. Use addition notation
B. Add whole numbers without models
C. Translate word phrases to math notation
D. Add whole numbers in applications
Suggested Homework Exercises: 59 – 133 odd

Section 1.3 – Subtract Whole Numbers

Topics:
A. Use subtraction notation
B. Subtract whole numbers
C. Translate word phrases to math notation
D. Subtract whole numbers in applications
Suggested Homework Exercises: 141 – 219 odd

Section 1.4 – Multiply Whole Numbers

Topics:
A. Use multiplication notation
B. Multiply whole numbers
C. Translate word phrases to math notation
D. Multiply whole numbers in applications
Suggested Homework Exercises: 225 – 337 odd

Section 1.5 – Divide Whole Numbers
    Topics:
    A. Use division notation
    B. Divide whole numbers
    C. Translate word phrases to math notation
    D. Divide whole numbers in applications
    Suggested Homework Exercises: 343 – 439 odd

<mark>**SUGGESTED ASSESSMENT**</mark>: Chapter 1 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 2 – THE LANGUAGE OF ALGEBRA

Section 2.1 – Use the Language of Algebra
    Topics:
    A. Use variables and algebraic symbols
    B. Identify expressions and equations
    C. Simplify expressions with exponents
    D. Simplify expressions using order of operations
    Suggested Homework Exercises: 1 – 63 odd

Section 2.2 – Evaluate, Simplify, and Translate Expressions
    Topics:
    A. Evaluate algebraic expressions
    B. Identify terms, coefficients, and like terms
    C. Simplify expressions by combining like terms
    D. Translate word phrases to algebraic expressions
    Suggested Homework Exercises: 69 – 141 odd

Section 2.3 – Solving Equations Using the Subtraction and Addition Properties of Equality
    Topics:
    A. Determine whether a number is a solution of an equation
    B. Solve equations using the Addition and Subtraction Properties of Equality
    C. Translate word phrases to algebraic equations
    D. Translate to an equation and solve
    Suggested Homework Exercises: 147 – 207 odd

Section 2.4 – Find Multiples and Factors
    Topics:
    A. Identify multiples of numbers
    B. Use common divisibility tests
    C. Find all of the factors of a number
    D. Identify prime and composite numbers
    Suggested Homework Exercises: 215 – 261 odd

Section 2.5 – Prime Factorization and the Least Common Multiple (LCM)
    Topics:
    A. Find the prime factorization of a composite number
    B. Find the least common multiple (LCM) of two numbers
    Suggested Homework Exercises: 267 – 311 odd

SUGGESTED ASSESSMENT: Chapter 2 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 3 – INTEGERS

Section 3.1 – Introduction to Integers
    Topics:
    A. Locate positive and negative numbers on a number line
    B. Order positive and negative numbers
    C. Find opposites
    D. Simplify expressions with absolute value
    E. Translate word phrases to expressions with integers
    Suggested Homework Exercises: 1 – 55 odd

Section 3.2 – Add Integers
    Topics:
    A. Model addition of integers
    B. Simplify expressions with integers
    C. Evaluate variable expressions with integers
    D. Translate word phrases to algebraic expressions
    E. Add integers in applications
    Suggested Homework Exercises: 63 – 121 odd

Section 3.3 – Subtract Integers
    Topics:
    A. Model subtraction of integers
    B. Simplify expressions with integers
    C. Evaluate variable expressions with integers
    D. Translate word phrases to algebraic expressions
    E. Subtract integers in applications
    Suggested Homework Exercises: 127 – 205 odd

Section 3.4 – Multiply and Divide Integers

    Topics:

    A. Multiply integers

    B. Divide integers

    C. Simplify expressions with integers

    D. Evaluate variable expressions with integers

    E. Translate word phrases to algebraic expressions

    Suggested Homework Exercises: 211 – 277 odd

Section 3.5 – Solve Equations Using Integers; The Division Property of Equality

    Topics:

    A. Determine whether an integer is a solution of an equation

    B. Solve equations with integers using the Addition and Subtraction Properties of Equality

    C. Solve equations using the Division Property of Equality

    D. Translate to an equation and solve

    Suggested Homework Exercises: 285 – 345 odd

==**SUGGESTED ASSESSMENT**==: Chapter 3 Practice Test

    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 4 – FRACTIONS

Section 4.1 – Visualize Fractions

    Topics:

    A. Understand the meaning of fractions

    B. Convert between improper fractions and mixed numbers

    C. Find equivalent fractions

    D. Locate fractions and mixed numbers on the number line

    E. Order fractions and mixed numbers

    Suggested Homework Exercises: 1 – 71 odd

Section 4.2 – Multiply and Divide Fractions

    Topics:

    A. Simplify fractions

    B. Multiply fractions

    C. Find reciprocals

    D. Divide fractions

    Suggested Homework Exercises: 77 – 167 odd

Section 4.3 – Multiply and Divide Mixed Numbers and Complex Fractions

Topics:

A. Multiply and divide mixed numbers

B. Translate phrases to expressions with fractions

C. Simplify complex fractions

D. Simplify expressions written with a fraction bar

Suggested Homework Exercises: 177 – 247 odd

Section 4.4 – Add and Subtract Fractions with Common Denominators

Topics:

A. Add fractions with a common denominator

B. Subtract fractions with a common denominator

C. Mixed Practice

Suggested Homework Exercises: 255 – 311 odd

Section 4.5 – Add and Subtract Fractions with Different Denominators (Part 1)

Topics:

A. Find the least common denominator (LCD)

B. Convert fractions to equivalent fractions with the LCD

C. Add and subtract fractions with different denominators

Suggested Homework Exercises: 317 – 369 odd

Section 4.5 – Add and Subtract Fractions with Different Denominators (Part 2)

Topics:

D. Identify and use fraction operations

E. Use the order of operations to simplify complex fractions

F. Evaluate variable expressions with fractions

Suggested Homework Exercises: 371 – 431 odd

Section 4.6 – Add and Subtract Mixed Numbers

Topics:

A. Add and subtract mixed numbers with a common denominator

B. Add and subtract mixed numbers with different denominators

Suggested Homework Exercises: 437 – 489 odd

Section 4.7 – Solve Equations with Fractions
    Topics:
    A. Determine whether a fraction is a solution of an equation
    B. Solve equations with fractions using the Addition and Subtraction Properties of Equality
    C. Solve equations with fractions using the Division and Multiplication Properties of Equality
    D. Translate sentenced to equations and solve
    Suggested Homework Exercises: 499 – 569 odd

SUGGESTED ASSESSMENT: Chapter 4 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 5 – DECIMALS

Section 5.1 – Decimals
    Topics:
    A. Name Decimals
    B. Write decimals
    C. Convert decimals to fractions or mixed numbers
    D. Locate decimals on the number line
    E. Order decimals
    F. Round decimals
    Suggested Homework Exercises: 1 – 85 odd

Section 5.2 – Decimal Operations
    Topics:
    A. Add and subtract decimals
    B. Multiply decimals
    C. Divide decimals
    D. Use decimals in money applications
    Suggested Homework Exercises: 95 – 195 odd

Section 5.3 – Decimals and Fractions
    Topics:
    A. Convert fractions to decimals
    B. Order decimals and fractions
    C. Simplify expressions using the order of operations
    D. Find the circumference and area of circles
    Suggested Homework Exercises: 201 – 279 odd

Section 5.4 – Solve Equations with Decimals
Topics:
A. Determine whether a decimal is a solution of an equation
B. Solve equations with decimals
C. Translate to an equation and solve
Suggested Homework Exercises: 285 – 351 odd

Section 5.5 – Averages and Probability
Topics:
A. Calculate the mean of a set of numbers
B. Find the median of a set of numbers
C. Find the mode of a set of numbers
D. Apply the basic definition of probability
Suggested Homework Exercises: 357 – 397 odd

Section 5.6 – Ratios and Rate
Topics:
A. Write a ratio as a fraction
B. Write a rate as a fraction
C. Find unit rates
D. Find unit price
E. Translate phrases to expressions with fractions
Suggested Homework Exercises: 403 – 479 odd

Section 5.7 – Simplify and Use Square Roots
Topics:
A. Simplify expressions with square roots
B. Estimate square roots
C. Approximate square roots
D. Simplify variable expressions with square roots
E. Use square roots in applications
Suggested Homework Exercises: 489 – 529 odd

SUGGESTED ASSESSMENT: Chapter 5 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 6 – PERCENTS

Section 6.1 – Understand Percent
Topics:
A. Use the definition of percent
B. Convert percents to fractions and decimals
C. Convert decimals and fractions to percents
Suggested Homework Exercises: 1 – 85 odd

Section 6.2 – Solve General Applications of Percent
Topics:
A. Translate and solve basic percent equations
B. Solve applications of percent
C. Find percent increase and percent decrease
Suggested Homework Exercises: 97 – 143 odd

Section 6.3 – Solve Sales Tax, Commission, and Discount Applications
Topics:
A. Solve sales tax applications
B. Solve commission applications
C. Solve discount applications
D. Solve mark-up applications
Suggested Homework Exercises: 151 – 195 odd

Section 6.4 – Solve Simple Interest Applications
Topics:
A. Use the simple interest formula
B. Solve simple interest applications
Suggested Homework Exercises: 201 – 237 odd

Section 6.5 – Solve Proportions and Their Applications
Topics:
A. Use the definition of proportions
B. Solve proportions
C. Solve applications using proportions
D. Write percent equations as proportions
E. Translate and solve percent proportions
Suggested Homework Exercises: 243 – 325 odd

SUGGESTED ASSESSMENT: Chapter 6 Practice Test
*Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 7 – THE PROPERTIES OF REAL NUMBERS

Section 7.1 – Rational and Irrational Numbers
Topics:
A. Identify rational numbers and irrational numbers
B. Classify different types of real numbers
Suggested Homework Exercises: 1 – 15 odd

Section 7.2 – Commutative and Associative Properties
Topics:
A. Use the commutative and associative properties
B. Evaluate expressions using the commutative and associative properties
C. Simplify expressions using the commutative and associative properties
Suggested Homework Exercises: 21 – 85 odd

Section 7.3 – Distributive Property
Topics:
A. Simplify expressions using the distributive property
B. Evaluate expressions using the distributive property
Suggested Homework Exercises: 91 – 153 odd

Section 7.4 – Properties of Identity, Inverses, and Zero
Topics:
A. Recognize the identity properties of addition and multiplication
B. Use the inverse properties of addition and multiplication
C. Use the properties of zero
D. Simplify expressions using the properties of identities, inverses, and zero
Suggested Homework Exercises: 159 – 209 odd

Section 7.5 - Systems of Measurement
Topics:
A. Perform unit conversions in the U.S. system
B. Perform unit conversions in the metric system
C. Convert between the U.S. and the metric system of measurement
D. Convert between Fahrenheit and Celsius temperatures
Suggested Homework Exercises: 215 – 297 odd

SUGGESTED ASSESSMENT: Chapter 7 Practice Test
*Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 8 – SOLVING LINEAR EQUATIONS

Section 8.1 – Solve Equations Using the Subtraction and Addition Properties of Equality
Topics:
A. Solve equations using the Subtraction and Addition Properties of Equality
B. Solve equations that need to be simplified
C. Translate to an equation and solve
D. Translate and solve applications
Suggested Homework Exercises: 1 – 63 odd

Section 8.2 – Solve Equations Using the Division and Multiplication Properties of Equality
    Topics:
    A. Solve equations using the Division and Multiplication Properties of Equality
    B. Solve equations that need to be simplified
    Suggested Homework Exercises: 69 – 103 odd

Section 8.3 – Solve Equations with Variables and Constants on Both Sides
    Topics:
    A. Solve an equation with constants on both sides
    B. Solve an equation with variables on both sides
    C. Solve an equation with variables and constants on both sides
    D. Solve equations using a general strategy
    Suggested Homework Exercises: 113 – 197 odd

Section 8.4 – Solve Equations with Fraction or Decimal Coefficients
    Topics:
    A. Solve equations with fraction coefficients
    B. Solve equations with decimal coefficients
    Suggested Homework Exercises: 209 – 247 odd

SUGGESTED ASSESSMENT: Chapter 8 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 9 – MATH MODELS AND GEOMETRY

Section 9.1 – Use a Problem Solving Strategy
    Topics:
    A. Use a problem solving strategy for word problems
    B. Solve number problems
    Suggested Homework Exercises: 1 – 41 odd

Section 9.2 – Solve Money Applications
    Topics:
    A. Solve coin word problems
    B. Solve ticket and stamp word problems
    Suggested Homework Exercises: 51 – 73 odd

Section 9.3 – Use Properties of Angles, Triangles, and the Pythagorean Theorem
    Topics:
    A. Use the properties of angles
    B. Use the properties of triangles
    C. Use the Pythagorean Theorem
    Suggested Homework Exercises: 81 – 123 odd

Section 9.4 – Use Properties of Rectangles, Triangles, and Trapezoids (Part 1)
Topics:
A. Understand linear, square, and cubic measure
B. Use properties of rectangles
Suggested Homework Exercises: 129 – 167 odd

Section 9.4 – Use Properties of Rectangles, Triangles, and Trapezoids (Part 2)
Topics:
C. Use properties of triangles
D. Use properties of trapezoids
Suggested Homework Exercises: 169 – 207 odd

Section 9.5 – Solve Geometry Applications: Circles and Irregular Figures
Topics:
A. Use the properties of circles
B. Find the area of irregular figures
Suggested Homework Exercises: 217 – 253 odd

Section 9.6 – Solve Geometry Applications: Volume and Surface Area
Topics:
A. Find the volume and surface area of rectangular solids
B. Find the volume and surface area of spheres
C. Find the volume and surface area of cylinders
D. Find the volume of cones
Suggested Homework Exercises: 263 – 301 odd

Section 9.7 – Solve a Formula for a Specific Variable
Topics:
A. Use the distance, rate, and time formula
B. Solve a formula for a specific variable
Suggested Homework Exercises: 307 – 355 odd

SUGGESTED ASSESSMENT: Chapter 9 Practice Test
*Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 10 – MATH MODELS AND GEOMETRY

Section 10.1 – Add and Subtract Polynomials
Topics:
A. Identify polynomials, monomials, binomials, and trinomials
B. Determine the degree of polynomials
C. Add and subtract monomials
D. Add and subtract polynomials
E. Evaluate a polynomial for a given value
Suggested Homework Exercises: 1 – 49 odd

Section 10.2 – Use Multiplication Properties of Exponents
Topics:
A. Simplify expressions using the Product Property of Exponents
B. Simplify expressions using the Power Property of Exponents
C. Simplify expressions using the Product to a Power Property
D. Simplify expressions by applying several properties
E. Multiply monomials
Suggested Homework Exercises: 55 – 137 odd

Section 10.3 – Multiply Polynomials
Topics:
A. Multiply a polynomial by a monomial
B. Multiply a binomial by a binomial
C. Multiply a trinomial by a binomial
Suggested Homework Exercises: 145 – 213 odd

Section 10.4 – Divide Monomials
Topics:
A. Simplify expressions using the Quotient Property of Exponents
B. Simplify expressions with zero exponents
C. Simplify expressions using the Quotient to a Power Property
D. Simplify expressions by applying several properties
E. Divide monomials
Suggested Homework Exercises: 219 – 295 odd

Section 10.5 – Integer Exponents and Scientific Notation
Topics:
A. Use the definition of a negative exponent
B. Simplify expressions with integer exponents
C. Convert from decimal notation to scientific notation
D. Convert scientific notation to decimal form
E. Multiply and divide using scientific notation
Suggested Homework Exercises: 317 – 415 odd

Section 10.6 – Introduction to Factoring Polynomials
Topics:
A. Find the greatest common factor of two or more expressions
B. Factor the greatest common factor from a polynomial
Suggested Homework Exercises: 423 – 489 odd

SUGGESTED ASSESSMENT: Chapter 10 Practice Test
*Note: Practice Test Answer Keys are posted on the video library homepage

CHAPTER 11 – GRAPHS

Section 11.1 – Use the Rectangular Coordinate System
    Topics:
    A. Plot points on a rectangular coordinate system
    B. Identify points on a graph
    C. Verify solutions to an equation in two variables
    D. Complete a table of solutions to a linear equation
    E. Find solutions to linear equations in two variables
    Suggested Homework Exercises: 1 – 33 odd

Section 11.2 – Graphing Linear Equations
    Topics:
    A. Recognize the relation between the solutions of an equation and its graph
    B. Graph a linear equation by plotting points
    C. Graph vertical and horizontal lines
    Suggested Homework Exercises: 39 – 95 odd

Section 11.3 – Graphing with Intercepts
    Topics:
    A. Identify the intercepts on a graph
    B. Find the intercepts from an equation of a line
    C. Graph a line using intercepts
    D. Choose the most convenient method to graph a line
    Suggested Homework Exercises: 117 – 195 odd

Section 11.4 – Understand Slope of a Line
    Topics:
    A. Find the slope of a line from its graph
    B. Find the slope of horizontal and vertical lines
    C. Use the slope formula to find the slope of a line between two points
    D. Graph a line given a point and the slope
    E. Solve slope applications
    Suggested Homework Exercises: 215 – 269 odd

SUGGESTED ASSESSMENT: Chapter 11 Practice Test
    *Note: Practice Test Answer Keys are posted on the video library homepage